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**DEPARTMENT OF THE ARMY
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Manual
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**Engineering and Design
INSPECTION, EVALUATION AND REPAIR OF HYDRAULIC STEEL STRUCTURES**

1. Purpose. This manual describes the inspection, evaluation, and repair of hydraulic steel structures, including preinspection identification of critical locations (such as fracture critical members and various connections) that require close examination. Nondestructive testing techniques that may be used during periodic inspections or detailed structural inspections are discussed. Guidance is provided on material testing to determine the chemistry, strength, ductility, hardness, and toughness of the base and weld metal. Analyses methods that can be used to determine structure safety, safe inspection intervals, and expected remaining life of the structure with given operational demands are presented. Finally, considerations for various types of repair are discussed.


2. Applicability. This manual applies to all USACE commands having responsibilities for the design of civil works projects.

3. Distribution Statement. Approved for public release; distribution is unlimited.

4. Scope of the Manual. Chapter 1 describes the types of hydraulic steel structures. Chapter 2 discusses the causes of structural deterioration. Chapter 3 describes periodic inspection procedures, which are primarily visual. If the inspection indicates that a structure is distressed, nondestructive or destructive testing, described in Chapters 4 and 5, respectively, may be required. Chapter 6 describes the evaluation of the capability of a structure to perform its intended function. Chapter 7 discusses the determination of fracture toughness, and Chapter 8 describes repairs.

FOR THE COMMANDER:

1 Appendix
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